What is claimed is:

1. An image-processing method for creating processed image data by applying a spatial-filtering processing to source image data, comprising the steps of:

setting a predetermined upper-limit value for a variation amount of said source image data, before performing an image-conversion processing through which said source image data are converted to said processed image data by applying said spatial-filtering processing; and

performing said image-conversion processing for said source image data within a range of said variation amount limited by said predetermined upper-limit value.

2. The image-processing method of claim 1,

wherein a plurality of spatial-filtering processing(s), characteristics of which are different each other, are performed either simultaneously in parallel or sequentially one by one in said image-conversion processing, and said predetermined upper-limit value is set for every spatial-filtering processing, corresponding to each of said characteristics of them.

3. The image-processing method of claim 2,

wherein a first spatial filter, having a characteristic to emphasize an amplitude of image data residing in a first spatial frequency band and also having a first upper-limit value set as said predetermined upper-limit value, and a second spatial filter, having a characteristic to de-emphasize an amplitude of image data residing in a second spatial frequency band and also having a second upper-limit value set as said predetermined upper-limit value, are provided in said plurality of spatial-filtering processing(s), and

wherein said first spatial frequency band is higher than said second spatial frequency band, and said first upper-limit value is greater than said second upper-limit value.

4. The image-processing method of claim 2,

wherein a plurality of spatial filters are provided in said plurality of spatial-filtering processing(s), each of them corresponding to each of said plurality of spatial-filtering processing(s), and

wherein, only when an absolute value of said variation amount, derived by applying said spatial-filtering processing

to each pixel data value corresponding to each of said plurality of spatial filters, is higher than a predetermined lower-limit value, said spatial-filtering processing is applied to said pixel data.

5. An image-processing method for creating a variable sized image by applying either an enlargement or a reduction processing to source image data including a plurality of color components, comprising the step of:

applying a plurality of spatial-interpolation processing methods, being different relative to each other, to said source image data, while each of said plurality of spatial-interpolation processing methods is corresponding to each of said plurality of color components.

6. The image-processing method of claim 5,

wherein one of said spatial-interpolation processing methods, being different in response to a magnification factor of either said enlargement or said reduction processing, is employed for processing at least one of said color components.

7. The image-processing method of claim 6,

wherein said spatial-interpolation processing methods are performed by employing weighted-addition average values of a plurality of pixels, and look-up tables (LUTs) of weighting coefficients, corresponding to said plurality of spatial-interpolation processing methods, are provided, and

wherein a weighted averaging operation in respect to said look-up tables is further performed in response to said magnification factor of either said enlargement or said reduction processing, in order to create new look-up tables for spatial-interpolation processing(s).

8. The image-processing method of claim 6,

wherein one of said color components includes data sets of at least three dimensions, one of which represents brightness information, and another two of which represent chrominance coded information, and with respect to a dimension representing said brightness information, a spatial-interpolation processing method, being different from that employed for said chrominance coded information, is applied, and said spatial-interpolation processing method is further changed in response to said magnification factor.

9. An image-processing method for creating processed image data by applying a spatial-filtering processing and either an enlargement or a reduction processing to source image data, under a condition that a magnification factor of either said enlargement or said reduction processing is lower than a predetermined value, comprising the steps of:

performing a size-varying processing to vary a size of an image up to a predetermined intermediate size established in advance and an angle-rotating processing to rotate an angle of said image up to a first angle value, being a predetermined rotating angle,

applying said spatial-filtering processing to image data processed by said size-varying processing and said angle-rotating processing; and

performing again said size-varying processing to further vary said size of said image up to an objective size also established in advance and said angle-rotating processing to reversely rotate said angle of said image up to a second angle value, being opposite said first angle value.

10. An image-processing method, comprising the steps of:

extracting a plurality of couples of pixels, in each of which two pixels are symmetrically positioned in respect to

an objective pixel to be processed through an image-processing;

calculating differential values between said two pixels and said objective pixel with respect to said plurality of couples of pixels;

extracting a specific couple of pixels, having a minimum differential value, out of said plurality of couples of pixels; and

setting a weighted-addition average value of three pixels including said specific couple of pixels and said objective pixel concerned, as a new objective pixel.

11. The image-processing method of claim 10,

wherein, only when said minimum differential value is lower than a first threshold value established in advance, a weighted-addition averaging processing is performed with respect to said specific couple of pixels.

12. The image-processing method of claim 11, further comprising the steps of:

establishing a new threshold value, which is obtained by adding a predetermined positive value to said minimum differential value;

extracting all of specific couples of pixels, differential values of which are lower than said new threshold value, out of said plurality of couples of pixels; and

setting an average value of image data, included in said specific couples of pixels, as a value of a noticed pixel.

13. The image-processing method of claim 11, further comprising the steps of:

establishing a second threshold value, being lower than said first threshold value established in advance; and

applying a noise-filtering processing to smoothen all image signals, being lower than said second threshold value.

14. An image-processing method for processing source image data, comprising the steps of:

setting a first threshold value predetermined in advance and a maximum radius from a noticed pixel, to be processed by an image-processing, to an objective pixel, being an object for comparison, with respect to said source image data;

applying a signal-smoothening processing to said source image data on the basis of said first threshold value and a differential value between said noticed pixel and said objective pixel to generate second source image data;

setting a second threshold value, which is smaller than said first threshold value, and a radius, which is larger than said maximum radius; and

applying again said signal-smoothening processing to said second source image data.

15. The image-processing method of claim 14,

wherein said source image data are obtained by applying a gradation-converting processing to image data outputted by an image inputting apparatus, and said first threshold value and/or said second threshold value are/is found on the basis of gradation-conversion characteristics in the vicinity of a signal value of said noticed pixel to be processed by said image-processing.

16. An image-processing method for processing source image data including a plurality of color components, each of which includes data sets of at least three dimensions, one of which represents brightness information, and another two of which

represent chrominance coded information, comprising the steps of:

applying a first spatial-filtering processing to a data set representing said brightness information; and

applying a second spatial-filtering processing to all of said data sets;

wherein a power for emphasizing a low-spatial frequency region in said second spatial-filtering processing is greater than that in said first spatial-filtering processing.

17. The image-processing method of claim 16, further comprising the step of:

performing a color coordinate-converting processing by which said brightness information and said chrominance coded information are converted to each of color component signals, after applying said first spatial-filtering processing and before applying said second spatial-filtering processing.

18. An image-processing apparatus for processing an image, comprising:

an image-inputting section to acquire image data of a source image from an image recording medium or a document having said source image;

an image-processing section to apply an image-processing to said image data acquired by said image inputting section, so as to create processed image data; and

an image-outputting section to output said image in either a first mode that said processed image data are written onto an information-recording medium, or a second mode that said image is written on an image recording medium to obtain a hardcopy, or a third mode that said image is displayed on an image-displaying device;

wherein said image-processing section employs anyone of the image-processing methods described in claims 1-17.

19. An image-processing method for creating processed image data by applying a spatial-filtering processing and a size-converting processing in an enlarging direction to source image data, comprising the steps of:

determining whether an effect of a sharpness-emphasizing processing, to be performed in said spatial-filtering processing, should be relatively strong or weak, based on instructive information in regard to image-processing items inputted in advance; and

applying said spatial-filtering processing at first, and then, said size-converting processing to said source

image data, when determining that said effect of said sharpness-emphasizing processing should be relatively strong; or

applying said size-converting processing at first, and then, said spatial-filtering processing to said source image data, when determining that said effect of said sharpness-emphasizing processing should be relatively weak.

20. An image-processing apparatus for processing an image, comprising:

an image-inputting section to acquire image data of a source image from an image recording medium or a document having said source image;

an instructive-information inputting section to input instructive information in regard to image-processing items to be performed in said image-processing apparatus;

an image-processing section to apply an image-processing to said image data acquired by said image inputting section, so as to create processed image data; and

an image-outputting section to output said image in either a first mode that said processed image data are written onto an information-recording medium, or a second mode that said image is written on an image recording medium

to obtain a hardcopy, or a third mode that said image is displayed on an image-displaying device;

wherein said image-processing section determines whether an effect of a sharpness-emphasizing processing, to be performed in a spatial-filtering processing, should be relatively strong or weak, based on said instructive information in regard to said image-processing items inputted by said instructive-information inputting section; and

wherein said image-processing section applies said spatial-filtering processing at first, and then, said size-converting processing to said image data, when determining that said effect of said sharpness-emphasizing processing should be relatively strong; or said image-processing section applies said size-converting processing at first, and then, said spatial-filtering processing to said image data, when determining that said effect of said sharpness-emphasizing processing should be relatively weak.

21. An image-processing method for extracting specific pixel values, whose differential values are lower than a predetermined threshold value, in respect to noticed pixels, and applying a weighted-addition averaging processing to said specific pixel values, comprising the steps of:

further extracting a maximum pixel value and a minimum pixel value out of said specific pixel values; and

applying an averaging processing to residual pixel values obtained by excluding said maximum pixel value and said minimum pixel value from said specific pixel values.

22. An image-processing method for finding sum-of-product values between noticed pixels and peripheral pixels, and establishing said sum-of-product values as values of said noticed pixels, comprising the step of:

extracting said peripheral pixels, to be employed for a calculation, out of a plurality of discontinuous pixels, wherein distance intervals for extracting said peripheral pixels are unequal relative to each other.

23. The image-processing method of claim 16,

wherein said second spatial-filtering processing further comprises the steps of:

finding sum-of-product values between noticed pixels and peripheral pixels;

establishing said sum-of-product values as values of said noticed pixels; and

extracting said peripheral pixels, to be employed for a calculation, out of a plurality of discontinuous pixels, wherein distance intervals for extracting said peripheral pixels are unequal relative to each other.